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CLINICS.

CLINICAL LECTURES.

Lecture on Operations and Practical Surgery. By WILLIAM FERGUSSON, F. R. C. S., F. R. S., Prof. Surg. in Royal Coll. Surg. Delivered at the Royal College of Surgeons of England.

MR. PRESIDENT AND GENTLEMEN:—Throughout the history of our profession, from the earliest date to the present time, distinctions have been drawn between Surgery strictly and Physic. The wisdom or necessity of drawing such distinctions is very questionable, particularly since the passing away of the dark days of surgery, when an inferior class acted under the orders of those who themselves could know but little of the art. As our profession gets older, the custom becomes less apparent, although in large towns and populous districts there will always be those who devote themselves specially and respectively to these departments. This, in my opinion, depends upon, and is determined by, natural habits and tastes rather than upon any actual necessity that the two should be disjoined, or that a union of skill in both is incompatible with man's mental and physical powers. I cannot myself see why there may not, should not, could not, be such a combination. Most of our legislative enactments on education seem to infer that our degrees and diplomas of the best stamp can be secured by those only who have acquired, and can display, a competent knowledge of each; and the impression seems to get stronger, that whilst a physician must be all the better for a good knowledge—aye, even power—in surgery, the surgeon will be a poor practitioner who has not a thorough knowledge of physic. One of our greatest lights in surgery, Sir Benjamin Brodie, who has but recently passed from amongst us, was as much distinguished in this respect as for his power in surgery properly so called, and the professional reputation of Abernethy was as much based

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on blue pill and black draught as upon tying great arteries, opening abscesses, or any other surgical proceedings with which his name was associated. In fact, the term "pure surgery" should, in my opinion, be banished from our vocabulary. The term is one of sheer affectation. One hears of a "pure surgeon" every now and then, but I declare I have never known such an animal in my life! If any one endeavoured to realize in his own person the man of surgery, as one working with his hands alone, he would be left high and dry in his "purism;" a stranded wreck, of little use either to himself or his fellow-creatures. In these days of rail and electricity, the strictly "pure surgery" required in Great Britain might be done by a dozen men, who, like the herniotomists and lithotomists of old, should travel from place to place, as their services might be required. But fortunately surgery in the present day stands on a more extended base, and we are delighted to call into use all the appliances to our art which raise it to a science. Without attempting to draw a line of distinction between the physician and the surgeon, as has often fruitlessly been done, I shall prefer to state that, in my opinion, so long as our profession exists there will doubtless be distinctions; and so, in the character of a "Simon Pure," I must limit my observations to matters "purely" surgical.

Now, with all the affectation referred to, it is a curious fact and feature in our department, that so long as a young man who has the diploma of a surgeon does not attempt operations on the living body, he may pass as a clever fellow, possibly a clever surgeon. If he tries his hand and fails, he must be content in future to work chiefly with the pen. If he succeeds and acquires reputation, he is, for a time, well-nigh worse off than the bungler. Enemies and friends say, "Ah, yes! he is very good with his hands, but he knows nothing else. He knows not when an operation should be done, nor can he treat a case properly, either before or after." Yet throughout all my experience the best operators have generally been the best pathologists, and as competent in practice otherwise—aye, even more so, than those who have been unable to cope with them in handicraft. The judgment in all pertaining to good surgery has been evinced as much (or more by one as by the other, and the operator has had the superiority of both judging and acting. To deride a young surgeon because he displays great powers with his hands is as unreasonable as to abuse an artist for superior skill with pencil and brush. Happily for the artist who excels, he gets credit for having a head to guide his hand, but the rising surgeon who shows skill in operations has to plod his way through obloquy until at last he fairly wrings out the admission that he is good in other respects also.

Whatever opinion may be held on these matters, one thing is certain—that surgery and operations cannot be separated. Our skill has not yet enabled us invariably to treat disease and accident so as to cure without operation. Nature, despite man's efforts, will still hold on in diseased action; and accidents involving serious injuries and necessitating surgical operations must happen to the end of time.

It may be called a great surgical crisis when the question of an operation arises; equal, if not greater, perhaps, to the important time when the operation itself is to be performed. Supposing that the decision is for an operation, and that the time for action has come, I think that I may fairly appropriate part of this lecture to a subject which my experience leads me to believe is often much neglected.

Occasionally an operation remarkable for its bungling succeeds; again, one which might be done in a couple of minutes may extend its tardy course over a hundred, and yet do well; but because such instances succeed they ought not to be the rule for the future. They ought rather to serve as landmarks or beacons, to point a better way. There is a carelessness and awkwardness evinced by many in the performance of surgical operations, hazardous to the patient and derogatory to the character of surgery. In every art perfection or improvement is aimed at, but I regret to have to make a partial exception as regards our own. Happily the examples are most numerous wherein men really have such objects in view; but some in high places have been careless—aye, incompetent in such matters. Yet what can be better for suffering and for surgery than that, when an operation is needful, it should be done with all that prearrangement, forethought, judgment, coolness, and decision which constitute perfection.

I have repeatedly seen surgeons proceed to operations with preparations signally deficient. No sponge, no lint, no strapping, no bandage, no dressing. I have seen a flap in amputation of the leg made before it was discovered that there was not a saw in the apartment. I have seen lithotomy performed with a common catheter for a guide; and the same operation has been resorted to with a common hair-curling iron, instead of forceps, to extract the stone!

It is in dealing with hemorrhage that the greatest defects are observable. The absence of good clean sponges in sufficient number is enough to mar the appearance of an operation even in the best of hands. I have heard a surgeon about to engage in such work say to the landlady or maid, "Have you such a thing as a sponge in the house?" I need not here dilate on the elegance of a domestic article of the kind; suffice it to say that I have looked with disgust at its application to a wound. Sponges are as essential to the satisfactory performance of an operation as plenty of water. The case cited by Sir Astley Cooper of a surgeon throwing down his knife and decamping in the middle of an operation is fortunately a solitary one; yet great embarrassments frequently arise, and chiefly among those who make little or no preliminary arrangements. He who has not calculated on what vessels may possibly be cut, will be the least prepared to meet emergencies; and I have generally observed that those with forethought have had least trouble on such occasions.

When blood flows, and that freely, I consider it characteristic of a good surgeon that, besides dealing with it promptly and decidedly, he should manage to conceal all traces of it as much as possible. There are some who seem to delight in the show of blood: thus, besides letting more flow than need be, they seem to take a pride in displaying it in all directions. They seem to calculate the brilliancy and magnitude of the operation by indications of blood being everywhere about. If the body-clothes and bed-coverings of the patient can be spotted all over or saturated, it is good; but better if, in addition, the blood finds its way through a mattress or two, and drips on the floor! A spirt here and there on the walls will be impressive; and if the operator and assistants be spattered from head to foot, so much the better! The man who glories in such sights, or takes no heed to prevent them, is likely to be pleased with a large display of white about the patient's dress, coverings, bed, or couch; and I have heard of such a one, not content with using towels for his hands, actually seizing the white bed-curtains and wiping his bloody paws! It seems a glorious thing in the estimation of such an operator that servants should carry away basins or pails full of water tinged, at least, with blood. Clots of course have an additional effect; and I have known many a simple operation, involving the loss of but little blood in reality, estimated on a very large scale from the circumstance that the tinged fluid has all been taken for blood. Hence it is no uncommon thing to hear from friends of a patient having lost quarts—even gallons—of blood when Mr. So-and-so performed the wonderful operation! Now all these things I hold to be contrary to the best characteristics of good surgery. My impression is that all the horrors of our art should be concealed from common observation as much as possible. Happily, in most of the important operations this can be perfectly done, in as far as the patient is concerned, under the benign influence of anæsthesia; but, whether as regards patients, friends, or onlookers, I consider it of importance to the character of surgery that such matters should be attended to. I remember when venesection was practised more than in the present time, that the operator was considered a bungler if he let a drop of blood be seen after the basin was taken away; and I have often thought that it would be well if such an idea could be impressed on those alluded to, who seem as it were to gloat on the sight of blood. He may consider himself a happy man who can boast of clean hands in this world of turmoil. One would think that a surgeon, in this part of his duties, might at all events set to work with a clear conscience in this respect. Yet I have seen a man of fame proceed from one operation to another with his hands covered with the first patient's blood.

Demeanour in an operation I hold to be of great consequence as characterizing good surgery on such occasions. I remember being early impressed on this subject. Of two surgeons of great reputation as operators, one could not proceed a step without speaking to or consulting some one near. Even a pupil was appealed to, if no one of

higher rank was by. The other would begin and finish without reference or a word to any one. On witnessing such scenes more than once, an impression arose that the one had no confidence in himself, but that the other was eminently endowed in this respect. There was in reality no lack of courage, knowledge, or skill with the one, but his demeanour was bad; and I need scarcely tell you that the other became the general favourite. No doubt even the greatest surgeons must every now and then deem it requisite to consult or to meditate during an operation; but the less the better for the character of surgery and the surgeon. A consultation during an operation detracts sadly from both. Yet a moment's hesitation will sometimes display the great master under emergencies! On such a pause I have seen the whole course of an operation altered, and, where for an instant all seemed chaos, a brilliant result effected. There has been no consultation, only a self-communing. The knowledge acquired in years has flashed through the mind, and the pause has been the crisis of a well-deserved success.

No operation can be perfectly done without efficient and well-trained assistants. The surgeon's style may often be judged by that of his assistants. I am far from holding myself as a perfect model regarding all these features that I have been referring to; yet I hope for pardon when I state that I considered it one of the highest compliments ever indirectly paid to me when a practitioner, who had been present at a somewhat lengthy operation, asked privately if there had been any quarrel with myself and assistants. When desired to give a reason for such a strange question, he stated that he had remarked during the operation that scarcely a word was exchanged amongst us! That was just what had been prearranged; and I have a recollection to this day that the operation was well performed by all of us.

The very attitude of a surgeon during an operation will often indicate his superiority, or the reverse; but this, I think, will be best illustrated by a reference to hospital practice. The most extraordinary differences will often be seen in the operating theatre. The style here must needs be peculiar; for not only has the operator to seek the best light for his patient's sake and his own, but he has to make the best display he can for the sake of pupils and onlookers. His own front, his face and hands, must almost invariably be towards the benches; and my own impression is that it almost amounts to a separate study to do that in the operating theatre, to the satisfaction of a large number of onlookers, which might be admirably done in private before half a dozen assistants and witnesses. The non-professional public cannot be expected to understand the phases between good bad, and indifferent teaching; and I doubt if it is thoroughly appreciated even in professional ranks. No corporation should be more thoroughly interested in such matters than this College; indeed, some legislation has been made recently on the subject of operative surgery, giving it more importance than heretofore in professional education; and I hope that I may not be going beyond my province as Professor of Surgery here when I call attention to the manner in which operations should or might be done in public.

Whilst all the points I have already referred to merit as much attention in public as in private, there is a necessity for display, if I may so call it, in the operating theatre, which is not required in a private house. The display is, in other words, a demonstration of the operation, and he who shows this to the greatest perfection is most likely to get the reputation of being the best operator—the best practical teacher.

A bad operator, who thinks little of what he is doing, often stands in his own light as regards the sun, but he just as frequently commits as great an error in standing between the patient and pupils. Lithotomy is amongst the few operations in which this position is sanctioned; but here I have often thought that pupils might see and learn as much by looking in the surgeon's face as at the breach of the patient.

Supposing I had to perform an operation and stood between you and the patient thus, with my back to the audience, and assistants around so disposed as to cover the part from view, you would naturally be annoyed, as your chief object in sitting there would be to see the proceeding.

Again, as a teacher, it would, in my opinion, be my duty, supposing the operation to be an amputation, to show the part just removed, to sketch the history of the case, to point out the incurable disease or damage, or the uselessness of the member, had it in reality been preserved; to speak

of the kind of operation performed, of the place of selection, and of the probable condition and usefulness of the limb or body afterwards. All these, and many other things, might be brought attractively and usefully, under the notice of pupils—for it must ever be borne in mind that they are intended wholly for pupils. In contrast to this, I shall tell how I have seen an hospital surgeon conduct himself. He has entered the theatre, addressed himself to his work, got it over to the best of his power—that is, as best he could—washed his hands (perhaps not), regaled himself with a snuff, nodded, winked here and there, and shaken hands with an acquaintance or two; then gone on with another case in a similar manner, and finally left the theatre without any indication of consciousness that pupils have been present!

Some may deem all these things unworthy of special notice. My own impression is that they are of considerable importance. To be a teacher is one of the attributes of a modern hospital surgeon. His general usefulness in the hospital will depend greatly on his powers of giving good instruction to pupils; and of this I am certain, that much of his own success in life will depend upon the manner in which he acquits himself at his public post.

Simplicity in regard to the performance of operations is important. All ostentation excepting the demonstrations to pupils, should be avoided. It is ridiculous to see an old hospital surgeon hold a stone above his head, still clutched in the forceps as he has just taken it from the bladder. It looks as if in his estimation such a thing had never been done before, or as if he had never done the like, and gives the impression, too, that he considers the extraction of the stone as the grandest thing in all his management of the case. Now, whilst I consider lithotomy, when well performed, as one of the finest of the surgeon's opportunities for displaying operative skill, I look upon the mere extraction of the stone as only one step—a great one certainly—in the treatment of the case; but it is unworthy the character of a first-class surgeon to show special exultation at this particular crisis. Better that the stone should be quietly laid aside until the patient is taken to bed, and that the operator should address himself to the wound, instead of flaunting his trophy over his head, with his back still to the onlookers. Part of *Hamlet's* advice to the players might, with some slight modification, be appropriately given to such surgeons:—

> "Suit the word to the action,
> The action to the word,
> Nor saw the air with your hand."

Next to good demeanour on the surgeon's part, I place that of his assistants. The best of operators may make but indifferent work if he is ill supported by those near him; but the manner of the assistant is, in truth, a tolerable criterion of the skill of the principal. He cannot always have the same, and he will generally be aided in accordance with the instructions which he lays down beforehand. Assistants, like principals, vary much in quality. Whatever responsibility may be put upon them, I always consider that the surgeon has the chief. When errors or failures happen, they depend almost invariably upon the surgeon himself; and I have never felt much sympathy with any one who has attempted to lay blame on those near him to excuse some bungling or blunder of his own. For my part I have had much reason to be satisfied with the efficiency of my assistants; and if I had fault to find, it has been with some outsiders, who have stood in need of the Harrow School custom of having their trousers-pockets sewed up, in order to let their hands be loose, and ready for the work before them.

Simplicity of instruments I take to be a good indication of an operator's skill. Even in the most complicated proceedings few comparatively are required; and the best operators I have seen have invariably trusted more to head and hands, than to a great number and variety of articles from a surgical *armamentarium*. Surgeons will always hold varieties of opinion as to number, shape, size, and other features regarding the instruments they like to use. But in an indifferent hand the best instruments will fail; and the trite and homely saying, that a bad reaper never has a good sickle, is, with due modification, equally applicable to the surgeon who has not the proper use of his hands. In these observations it may be noticed that almost everything I have said has reference to forethought and pre-arrangement with regard to surgical operations. It is often a test of a surgeon's worth when he is called upon to give an opinion on a case just as it is first brought

before him. To form his opinion, give it, and act upon it, comprise the principles and practice of surgery as regards that case. At a glance, it seems as if there were nothing preliminary in all this; but, in reality, the man's whole knowledge and experience have in a manner constituted the prear rangements for the application of his skill under the circumstances. It is seldom indeed that a surgeon is called upon to operate at a moment's notice. Generally he has hours, days, or months to think upon what may be required. Now it seems to me unpardonable that there should be serious neglect when there is full time to prepare. I have heard of a surgeon being called to the country to perform lithotomy who, when about to see his patient, asked the village practitioner "if he happened to have any lithotomy instruments by him," having neglected to bring his own! It is not difficult to understand how a gentleman of this stamp has, with even large opportunities, made but an indifferent figure in the surgical world.

There is scarcely a thing done in our social relations in which forethought and prearrangement are not absolutely requisite. Much of our comfort in life, our meals, our meetings, our business transactions, are all so regulated. What spectacle, from "Punch" to a grand review, does not depend upon these? What great battle has been fought on chance? A great surgeon has been not inaptly compared with a great general: both have to do largely with human life. A battle, if one there must be, is a grand crisis with the soldier. An operation, if one cannot be avoided, is a grand crisis with the surgeon. What would we think of a general who went into battle without prearrangement, and what should we think of a surgeon who neglectfully stumbles unprepared upon his crisis? These observations are not made without reasonable grounds. There are some men who think so little or so erroneously, that I have seen the body amputated from the leg—fortunately, however, on the dead subject; but I have seen a similar process begun on the living by an hospital surgeon when happily his hand was arrested in time!

It is worse than affectation, it is ignorance of the true duties of the surgeon, a want of appreciation of the grand characteristics of surgery, that leads to such culpable trifling with our noble occupation; and I hope that I may not be considered in error by raising my humble voice as I have now done against such dealing with a critical part of an essential of true surgery.

After all I have said, I feel that I cannot go wrong in referring to the management of cases before and after the grand crisis of an operation; for here I shall tread on ground which, as already stated, some consider of higher quality. I shall leave the simply mechanical or art-work of our profession (dare I call it artistic?), and take to the so-called higher department.

I hold it impossible to separate the diagnostic part of our occupation from the treatment; for in reality there can be no sound method of practice which is not founded on correct diagnosis. This, in fact, gives us our exemption from empiricism. In general we profess to see the nature of a case, and to act accordingly. Yet what enormous variety there is in this action, and how seldom half a dozen men will think and act in all respects alike in any imaginable case! To keep to those requiring operations, much has been said regarding what has been called the preparatory and after treatment. There are operations in which no time is permitted for preparation; herniotomy, tracheotomy, and immediate amputations are of that kind. Even in these, some periods are, perhaps, more favourable than others. In many instances I may say that possibly the earlier the better; yet a judicious surgeon might wish to watch, particularly in the case of shock after accident. But it is chiefly to the instances where there is time for preparation that I wish to refer at present. Supposing a tumour, a chronic disease of joint, of bone, or of the urinary organs, incurable otherwise, of what does this treatment consist? If the tumour is not malignant, in all probability the patient is in rude, or the best health that can be expected for his age. The custom of bringing the strength, or constitution, as the term goes, in such a case down somewhat below par by purging and bloodletting seems to have been abandoned, and very properly so in my opinion. In other instances suffering will already have effected such a change, and it may often be the object of the surgeon to improve the shattered health before submitting the constitution to a trying ordeal. There are cases where we may feel convinced that

time, a judicious course of medicine, wholesome food, and good air may effect some restoration. There may be a lingering hope that the disease may pass away, or get well under such treatment; but in the majority of instances, if an operation seems inevitable, I believe that the shorter the preparation the better. The patient is thus relieved at an early date from that which would continue to harass him mentally as well as bodily, and the prolonged strain of the disease is avoided. But it is affectation to talk of superior skill on these points—particularly if it is to be displayed by way of a course of medicine. I generally suspect a man's qualities who shows much faith in preliminaries in these instances; and even should the end be a cure without an operation, I should question his knowledge all the more, if he seemed to think that he was doing that which Nature was in reality effecting—possibly despite his physic. For my own part, I confess to a great desire to see what nature will do, for I fancy that operations and mutilations may thus occasionally be avoided; but when once hope is lost, then direct surgical interference will generally be found the most effective step. Nature has then a chance—the best chance—to show her resiliency; and where her powers are as yet but little sapped—where the organism is still perfect—she rarely fails to answer pleasingly to judicious surgical interference.

You may thus perceive that I place but little confidence in so-called preparatory treatment. A moderate share of common sense, and a simple dose or two, will go further than the most elaborate course of physic. Even greater importance, naturally enough, has been put on after-treatment than on that before an operation. Here, too, there is a strong call upon common sense—that being best dictated by the mind most highly imbued with the characteristics of good surgery. To wait quietly on Nature under such circumstances, and to aid her gently and judiciously, are the best merits of the surgeon. I confess to having much more reliance in surgical management at this stage; but even here good sense must be a predominating quality. We may set aside bloodletting and purging here also as being out of the question, except in rare and peculiar cases. Sir Astley Cooper has related how a patient with a compound fracture got a purgative in over-dose, and was so disturbed that evil came upon the wound, and he died. This may be taken as an example of injudicious interference. Constipation is an evil of less moment than disturbing or irritating Nature in her local work; and purging and bloodletting amount to abstractions from her powers at a time when to give strength is the true philosophy. I am disposed to put it as an axiom that, up to a late period of life, Nature is more prone to repair than to destroy. We see this strongly marked in both vegetable and animal life. The younger the life the more strongly is this convinced; and in other instances she must be allowed time and favourable circumstances for the perfection of her work. If a limb is lopped off a tree of moderate age she will cover the wound with a cicatrix of bark just as certainly as seasons come round. It may be one season or it may be half a dozen or more, in accordance with the size of the wound or open surface. Just as certainly will she close a wound in the animal frame; but, in addition, she does it more rapidly.

It would be going from my true path were I to discuss such subjects at length—I should be going *ultra crepidam;* but the analogy is worth bearing in mind, and I refer to it at present chiefly with the view of drawing attention to this fact, which the attendant on vegetable life knows so well—that a certain time is absolutely necessary for Nature to do her work; that he can no more hurry her on than can the farmer get his harvest months before the allotted time. It is not to be wondered at that patients should fancy that the surgeon has the power of thus working, but it is to me amazing that he should affect that power. Of course it is his duty to place parts so that Nature may have a fair chance of doing what is wanted; but even with the nicest approximation of surfaces Nature will not always effect immediate union. All the medicines in the world, all local balsams that can be imagined, will have no influence in some instances. As well might we affect to arrest or stay the hand of earthly fate. Yet, with all these views, I am a great believer in after treatment, and fancy that a surgeon's skill may be justly gauged in many respects by his conduct on such occasions.

I have already alluded to this subject in a previous lecture, and need say little more

upon it. Quietude is all important. If you wish parts to unite, you must resort to mechanical means to keep them in apposition; if you want them kept asunder, you must be equally on the alert. But whilst all seem tolerably agreed as to local treatment, there is great variety of opinion as to constitutional. It is here, perhaps, that the little weaknesses of our intellect are displayed chiefly in the fact that we deceive ourselves with the impression that we are doing that which Nature is bringing about in her own way. Some fancy that the perfection of treatment is to keep a patient low; others that rather a stimulating course should be followed, particularly if the patient's condition is not satisfactory. For my own part, I strongly advocate giving Nature much of her own way here also. If the patient is much exhausted by previous disease, he must be vigorously and judiciously supported. If, on the other hand, he has been suddenly prostrated whilst in full health, there need be no call for stimulants. Such a patient is almost certain to have more or less sympathetic fever, and until immediate union has taken place or suppuration has supervened, the fever may be kept in check by some ordinary means. But unless some serious mischief be setting in, such as inflammatory deposits elsewhere, it may well be doubted if anything special be required beyond seeing that the skin, kidneys, and bowels are all acting fairly. A partial want of appetite, a slight acceleration of the pulse, aye, even considerable excitement, need cause little anxiety, provided the tongue be clean and moist, and the skin gently bathed in perspiration. But these are familiar subjects, and I need not dwell on them. There is much room for judicious hygienic management at such a time. The less medicine the better; and experience has convinced me that the nearer a patient is kept to what may be considered his natural style of living, the less will be the shock from operation, and the more rapid will be his recovery. Indeed I am convinced that in the majority of surgical maladies this is the safest course to follow. If a man takes beer, spirits, or wine, I believe it unwise to withdraw them entirely, unless for special reasons in a particular case. In various forms of venereal, for example, it is common to alter a man's diet, particularly to keep him very low. I not only doubt the wisdom of this, but am convinced that in many instances much harm is the result. But I am touching ground scarcely within my present scope, and shall only repeat what I have already stated regarding treatment after operations, that in my opinion the nearer the patient is kept to a normal condition the better will be the progress of the case.

My object in this lecture has been to endeavour to place the cutting operations in surgery upon a proper footing. Because a man, even a most accomplished medical man, cannot appreciate or enact this part of our profession, it is most absurd that he should abuse and attempt to depreciate it; and, above all, it is highly improper that such an important step and crisis as an operation should be held as a proceeding to be got over in any way. The common saying, that "what is worth doing is worth doing well," is surely as applicable where human life is at stake as to the ordinary affairs of man; and as I hold that hospital surgeons and those in public appointments to large institutions should be model men, each according to his abilities and opportunities, I have ventured to refer to public practice, or teaching practice as it might be called, in the way I have done, because I think, with all humility, there is ample room for improvement.

Whilst estimating highly, as I do, the value of well-devised and well-executed cutting operations, and holding the opinion that these constitute the highest department of what some affectedly call "pure surgery," they in reality amount to a comparatively rare portion of true operative surgery. Many people have the idea that a surgical operation must of necessity be done with a cutting instrument, but it may be said with truth that probably not a tithe of manual surgery is of this kind. The varied applications of the fingers and hands in diagnosis, in dressing wounds and sores, in strapping and bandaging, in tying threads and making knots, in setting dislocations and fractures, are all, in my opinion, as much in the department of operative surgery as when the knife is in use; and what man of experience will not admit that catheterism has often cost him more trouble and anxiety than lithotomy? These are "pure surgery" as much as puncturing with a lancet on the face for erysipelas, or cutting from hip to heel with a bistoury for the same disease. I will not admit that this manual

practice is less worthy of consideration than, or is of inferior grade to, wielding a pen. The popular idea is, that when the pen is used, some deeply garnered, highly cultivated skill is laid on paper in the form of a prescription; and so it may be. But why should it not be allowed that the correct wielding of a knife by the surgeon emanates from the brain as well?

It is the pride of modern surgery to prescribe as well as to act. There is head work in it as well as hand work. Without action, prescription would be useless; without prescription, surgery would be without soul!

I have endeavoured in this lecture to give each department its fair place and characters without disparagement to others; and, regarding all that I have spoken of to-day, there need be no doubt that favourable progress has been made in this the nineteenth century. Cheselden boasted that his first twenty-five operations for stone were witnessed by "above twenty" persons. There was no medical press—no "fourth estate"—in his day. Now, in our hospital practice, we can refer to witnesses by the hundred; and addresses like these are not confined to magnates such as I see before me, but are sent by our journals over the length and breadth of the world.—*Lancet*, July 15, 1865.

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Clinical Remarks on the Present Epidemic of Diarrhœa.—Dr. Greenhow, of the Middlesex Hospital, said that he regarded the existing prevalent diarrhœal disease as due to the great heat, drought, and exceptional character of the present season, which, in several respects, resembled that of former years, in which diarrhœa or cholera had been epidemic. He was not prepared to pronounce decisively how excessive heat produced an epidemic of diarrhœa, but of the fact that it did so there could be no question, diarrhœal disease being much more prevalent in hotter than in colder climates, and in hotter than in colder seasons. He had himself, from the character of the early part of the present season, expressed his expectation of the occurrence of a considerable epidemic of diarrhœa during the autumn, and his anticipations had been so far verified by the event at an unusually early period of the year, for the mortality from this disease during the past week had been greater than during any corresponding week of the last twelve years; more than double that which took place during the corresponding weeks of any one of the years 1857, 1858, and 1859, when diarrhœa also caused a very large mortality; and more than five times as great as that during the same week of either of the years 1853 and 1854, in which the last epidemic of cholera occurred. This excess of mortality from diarrhœa several weeks earlier in the season than usual obviously corresponded to the unusual heat of the spring and early summer of the present year, and it seemed to him only too probable that, unless a considerable change should take place in what had been aptly termed the constitution of the year, the existing prevalence of diarrhœa might be only the beginning of a very serious epidemic of this disease, or possibly, even, of cholera. He remembered a similar observation made some years since by Mr. Thorn, an Indian Surgeon of great experience, who had devoted special attention to the influence of season and weather in the causation of disease. Writing at Kurrachee (Scinde), in the autumn of 1846, Mr. Thorn said that, observing from the weekly report on the meteorology of London published in the *Medical Gazette* that the season there as well as in India was an unusually hot one, he should expect to hear in consequence of an unusual prevalence of diarrhœa in London during the autumn. The correctness of this prediction was strikingly proved, for at the very time it was made diarrhœa was prevailing extensively in London, and actually caused in that year a much larger mortality than during any previous year since the commencement of the present more accurate system of registering the causes of death.

Autumnal diarrhœa had been often ascribed to errors of diet or to checked perspiration. Doubtless errors of diet were often the immediate exciting causes of such attacks, especially during an epidemic period, but they could not be the only or even the principal causes of the disease, or it would prevail more equally during the autumnal seasons of different years. Neither could checked perspiration be a general cause of epidemic diarrhœa, inasmuch as the prevalence of this disease waxed and waned with the rise and fall of the thermometer, was greatest when a high atmospheric temperature was associated with deficiency of atmospheric movement and with a high reading of the barometer, and was diminished instead of being aggravate

by any fall of temperature. Whether, on the other hand, heat alone could produce an epidemic of diarrhœa might be a question; he himself believed that whenever the intensity of this disease was great a miasm arising from the decomposition of certain animal matters by heat was the chief cause. Whether this decomposition could proceed in water as well as in air, he had not yet been able to satisfy himself; but he had had positive proof that water could absorb the miasm, and thus frequently become the means of introducing it into the system.

In the cases of diarrhœa which he had lately seen, and especially in those among children, the purging had for the most part been profuse, watery, and attended by much prostration. The pallor and anæmia which ensued even after a brief attack were indeed very remarkable. He had seen no cases as yet this season to which the term malignant or Asiatic cholera could properly be applied; but in a few instances there had been vomiting and cramps, and the cases resembled what was called by Sydenham cholera morbus, and had since been termed summer cholera. Generally, the diarrhœa had been unattended by pain; but there had also come under his care a few cases of dysenteric character—that is to say, of diarrhœa attended by tormina and tenesmus, in which the stools were mixed with mucus, and in a few instances with blood.

As regarded treatment, his usual course in the severer cases among adults was to give a mild mercurial, such as two grains of calomel or four grains of gray powder with one of opium at bedtime, following it up with a dose of castor oil next morning. Meantime, by way of allaying the purging and the sickness, if present, he gave at intervals of three or four hours a draught consisting of an ounce and a half of lime-water with ten grains each of nitrate of bismuth and carbonate of magnesia and twenty drops of aromatic spirits of ammonia. Under this treatment the diarrhœa usually disappeared rapidly; but the patients remaining anæmic, and sometimes dyspeptic, he was in the habit of prescribing a warm vegetable bitter, such as infusion of gentian or chyretta with compound tincture of cardamoms, in combination with either nitro-hydrochloric acid or bicarbonate of potash, according to circumstances, to be taken two or three times a day until convalescence should be established. He objected to the use of chalk mixture and of powerful astringents in these cases, although it was true that they often speedily checked the diarrhœa, because he had found the complaint more apt to recur and to be followed by an intractable form of dyspepsia after the use of these remedies than in cases which had been treated in the manner he had described. He had also found diluted sulphuric acid, which was so much recommended for epidemic diarrhœa, less efficacious than the before-mentioned remedies, and moreover objectionable on the score that, even when given in combination with opium, it frequently caused griping pains. When the diarrhœa assumed a dysenteric character, he had adopted with success the same general plan of treatment, but had found it necessary to repeat the mercurial and castor oil doses for two or three successive days. In cases in which this form of the disease proved obstinate, he had substituted for the lime water draught the nitrate of bismuth with small doses of morphia in the form of pills with the most satisfactory results. In all cases he had directed a rigid adherence to a milk and farinaceous diet during the continuance of the diarrhœa.—*Med. Times and Gaz.*, July 22, 1865.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Chief of the Bureau of Medicine and Surgery, U. S. Navy.—This position, rendered vacant by the death of Dr. Wm Wheelan, has been filled by the appointment of Dr. Phineas J. Horwitz.

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University of Vermont, at Burlington.—At a recent commencement in this school the degree of M. D. was conferred on 33 candidates.

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St. Louis Medical College.—At the annual commencement of this school, held on the 3d of March last, the degree of M. D. was conferred on 57 candidates.

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University of Louisville.—At the public commencement of this college, held on the 1st of February last, the degree of M. D. was conferred on 26 candidates.

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Obituary Record.—Died, in Nashville, July 9th, 1865, aged 84, Felix Robertson, M. D.

FOREIGN INTELLIGENCE.

Death from Chloroform.—We regret to learn that a case of this happily rare accident took place last week at the Meath Hospital. The patient was an elderly man, on whom it was necessary to operate for cataract. He was placed under the anæsthetic influence by a clinical student, with the immediate superintendence of the operating surgeon, and the operation on one eye had been effected when he was observed to change colour, and in spite of the use of galvanism and other nervous stimuli, he expired. An inquest and post-mortem examination was subsequently held, when the heart was found in a very soft and fatty condition. No arcus senilis existed, nor had any morbid sound been detected on auscultation, and as he had been already twice placed under the influence without ill effect, the case must be regarded as one of those untoward occurrences against which it is impossible to guard.—*The Medical Press* (Dublin), July 12, 1865.

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Recent Progress of Nerve Histology.—At the College of Surgeons on the evening of the 24th of February, Prof. Allen Thompson, of Glasgow, delivered a very comprehensive, clear, and eloquent lecture on the "Recent Progress of Nerve Histology." He commenced by indicating the relations between the anatomy of the nervous system and its physiology. He then proceeded to show how much the recent progress of our knowledge depended upon the excellence of our microscopes, and remarked that we were indebted to the use of various reagents, especially to chromic acid solution and the staining the structures with ammoniated solution of carmine, for much of our present knowledge. The effect of carmine was especially marked in our anatomical knowledge of the spinal cord. Under carmine-staining, prolongations of the pia mater were seen to extend into its substance. The structure of the cord was found to consist of nerve-tubes, which presented under the microscope dark spots surrounded by an outer coat when subjected to carmine solution. Dr. Thompson appears to be doubtful as to the benefit to science to be derived from the more recent improvements in microscopic object-glasses, and seems to doubt whether object-glasses of the one-twenty-fifth and one-fiftieth of an inch focal distance will conduce greatly to the extension of our certain knowledge. The lecturer afterwards pointed out what the recent progress was, more especially as to the more accurate knowledge of the structure of the spinal cord, the nature of nerve-cells, and the terminations of nerves in the skin, muscles, eye, nose, &c.; and showed what Lockhart Clarke and others had recently done to elucidate these doubtful questions. The lecture was listened to with much interest by a large and attentive audience, and at its conclusion the lecturer was deservedly thanked for his able exposition of a very interesting subject.—*Lancet*, April 8, 1865.

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Mucous Polypus of Larynx.—Prof. Gilewsky, of Krakau, lately related to the Vienna Medical School a case of mucous polypus of the larynx in a young woman, which he had removed by dividing the thyroid cartilage. Very little bleeding followed. Professor Türck said he was convinced that laryngotomy was in many cases the best operation for the removal of laryngeal polypi.—*Ibid.*

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Military Surgery in France.—A work of paramount importance, modestly called a Report to the Medical Board of the Army, has lately been published by M. Chenu, a high authority in the Medical Department. It is entitled, "A Medico-Chirurgical Report on the Flying and Stationary Hospitals of the French Army during the Crimean Campaign." It has no less than 800 quarto pages, and more than one hundred tables and statistical computations. The author, says the *Gazette Médicale de Paris*, has been anxious to publish facts, irrespectively of every consideration; and we doubt not that the book will be eagerly sought by military surgeons in this country, as Mr. Longmore's is in France. M. Chenu is extremely minute in his classification, both as regards the field and hospitals; and the labour bestowed must have been immense. The comparative mortality of the French and English armies is thus stated:—

	French Army.	English Army.
Effective men	309,268	97,864
Deaths	95,615	22,182

The work is divided into numerous parts, including all the injuries and diseases which have been observed. Wounds from gun-

shot occupied much of the author's attention, and he dwells particularly on the fact that such wounds, owing to the peculiar firearms now used, are more serious and more frequently met with than formerly. Herein he quite agrees with Inspector Longmore, who states that the army of the Duke of Wellington on the 16th, 17th, and 18th of June, 1815, including the battle of Waterloo, had 8000 wounded, whilst at Solferino the Franco-Sardinian army had 16,000, and the Austrians 21,000. Hence the necessity of increasing the surgical material and the medical officers in any future campaign. The author gives a vivid and extremely true picture of the perils and hardships of the non-combatant military surgeon. The following figures show the relative sacrifice of life among combatant officers and military surgeons: In the Crimean campaign, of 5852 combatant officers of every rank, 779, or 17 per cent., were killed or died from wounds received in the field, and 402, or 7.30 per cent., died of various diseases (these figures include the commissariat, chaplains, &c. &c.). The mean number of medical men was 450, of whom 82, or 18.22 per cent., died of various diseases. The typhus at Constantinople carried off 26 combatant officers—viz., 0.17 per cent., whilst, by the same scourge, 58 medical officers perished—viz., 12.88 per cent. These figures speak for themselves.—*Lancet*, May 20, 1865.

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Cholera in Mecca.—The *Trister Zeitung* of June 26 publishes a report from Alexandria on the cholera in Mecca, in which it says: "The Musselman festivals of the Kurban Bairam took place during the first twenty days of May, when 600,000 to 700,000 pilgrims annually assemble in Mecca and upon Mount Ararat to celebrate their pilgrimage with the usual religious ceremonies. The mode of life, utterly opposed to all rules of dietetic prudence, pursued by these crowded masses for ten or fifteen days at the Holy Places, yearly entails a number of diseases to which many are sacrificed. This year the cholera, or, as the Government prefers to call it, cholerina, was added to the customary pests, and is said to have carried off 20,000 people at Mecca and Gebel Ararat within the short space of two months. Private accounts place the loss of pilgrim life at 100,000, an estimate obviously exaggerated, as these do not even include the deaths by cholera. We, in Alexandria, have no more exact details as to this terrible drama, which makes no extraordinary impression upon the pilgrims themselves, who, in their religious fanaticism, believe every one is certain of Paradise who dies during pilgrimage. The country being at all times inaccessible to European medical men, the meagre reports we have are derived from a few Egyptian military surgeons ordered by the Government to accompany the pilgrims from Egypt."—*Med. Times and Gaz.*, July 8th, 1865.

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Progress of the Cholera.—It appears from our late journals (Aug. 12th) that the cholera which has for some time prevailed in Egypt and carried off a large number of victims in Alexandria is steadily extending along the basin of the Mediterranean. It has appeared at Cyprus and telegrams of the 28th of July state that from 40 to 50 fatal cases were occurring daily. It has also broken out at Delos. At Smyrna the disease was very rife. It prevails generally at Constantinople and in the villages in the neighbourhood. One village on the Bosphorus, Yenikeni, is reported to have suffered severely. It has appeared in Italy. At Ancona on the 4th of August 34 deaths were reported. In Malta both the civil and military population are suffering from the disease. It has appeared in Sicily, some cases occurred in Catania and Palermo. Several cases have also occurred at Marseilles.

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Insanity, Medical and Legal.—Dr. James Rorie, in the *Edinburgh Med. Journ.* for July, attempts to give a definition of insanity. In concluding, he says: "We have seen that a very important difference exists between insanity regarded as a medical and lunacy regarded as a legal question. While the former applies to a disease which may or may not destroy responsibility, the latter demands that irresponsibility be proved, before it can be admitted as a plea; and the great puzzle of the present day with regard to civil incapacity and irresponsibility is, how to bring insanity under medical treatment before it has rendered the individual legally irresponsible. Into this subject I cannot at present enter, and will now close with the practical inference that it is the duty of the medical practitioner, in giving evidence as

to the mental condition of a person on trial for outraging the laws of his country, to satisfy himself that the insanity destroys responsibility before certifying him to be a lunatic. To certify a person in such circumstances to be insane because he appears unable to control his actions is to offer a medical theory where a medical fact is demanded, and is to become an advocate of that pseudo philanthropy which would insist on moral perversion being legally recognised as proof of irresponsibility—a state of matters which would be fraught with the greatest danger to all our social interests. The depravity, immorality, and low cunning of a convict may resemble in some respects the character of the true moral lunatic; but for such cases seclusion in Portland or Pentonville is the best of moral remedies, and in dealing with such, the medical practitioner should never forget that laws 'cannot be framed on principles of compassion to guilt.'"

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How the Exact Spot at which the Fault in the Atlantic Cable was Determined.—The following highly interesting information obtained from Mr. Seward, the general superintendent of the Atlantic Telegraph Company, is published in the *Med. Times and Gaz.* (Aug. 12, 1865).

"The Atlantic cable consists of a certain number of copper wires, each of which is insulated by a covering of gutta percha, the whole being further protected by a general envelope of iron wire and tarred hemp.

As long as the cable was intact, an electric current sent from the positive pole of a battery at Valentia traversed the whole length of one of the copper wires, and thence went through the bottom of the ship, and through the sea and bottom of the ocean, until it reached the negative pole of the Valentia battery. This return current through the bottom of the ship, sea, and land is what is technically known as the "earth current." Now, although copper is one of the best conductors, it is still not an absolute conductor; it opposes a certain amount of resistance to the electrical current, and consequently requires a certain number of "*cells*" to force the current through it.

The resistance increases in direct ratio to the length of the wire; and as the resistance can be measured, it follows that the length of wire in connection with the battery can be determined.

It is possible to estimate the resistance by the number of cells necessary to transmit signals clearly. This would, however, be a very rough method; but very fine galvanometers have been constructed which show the exact amount of current transmitted. The galvanometer of Professor Thomson, of Glasgow, is perhaps the most delicate, and was the one which was used in the case of the Atlantic cable.

Before the cable started, exact calculations were made as to the amount of resistance per mile of the copper wire. Let us suppose that the resistance of the entire length was found to be 100 units. The cable parted—let us say at its centre—and one end fell to the bottom of the ocean. What would be the result? A current starting from the positive pole of the Valentia battery would now traverse half up the cable, and then return through the earth to the negative pole of the battery. As the current had only half of the number of miles of copper wire to traverse, it would only experience half of the resistance, or 50 units, and thus the force of the electric current would be shown by the galvanometer to be double what it had been previously. This is the principle upon which the electricians at Valentia have decided that the Atlantic cable has parted about 1250 miles from land.

The signals from the *Great Eastern* ceased. The electricians applied their galvanometers, and found that the force of the electric current was greatly increased. They judged that it had a shorter circuit to traverse. They knew the number of units of resistance possessed by each mile of copper-wire. They were able to interpose artificial resistance by means of certain instruments. They added on mile after mile of artificial resistance just like so many weights, until their galvanometers showed that the force of the current was reduced to what it had been when the cable was perfect. They then made an easy calculation, and determined the spot at which the cable had given way. They found that the end of the cable communicated with the ground 1250 miles from the shore end. In technical parlance, they had dead earth at 1250 miles' distance.

The last time that an Atlantic cable

parted, voltaic action was set up by the action of the salt water upon its copper and iron wires. This produced what are termed battery currents. These battery currents have not in the present instance been set up, probably because the iron wire is better protected than it was in the last cable.

We have heard a great deal lately about electrical storms. The atmosphere is always electrical, but usually the electricity is quiescent. Under certain conditions, however, the electrical state of the atmosphere is disturbed. Lightning is not a necessary consequence, but currents of positive and negative electricity keep darting about.

The electricity is of very high tension; that is to say, it is capable of being conducted by substances which are almost absolute non-conductors to mere voltaic currents of very low tension. The electricity of the atmosphere, then, is able to strike a wire in spite of its so-called insulating medium. It pierces the gutta-percha covering, and darts along the wire, utterly swallowing up the artificial currents which it may meet, and spoiling the telegraphic communication for the time being. A storm of this kind began on Wednesday, the 2d instant, and continued till Sunday, the 6th, and at first it was fondly hoped that the cessation of the signals from the *Great Eastern* was due to this cause. The storm has ceased, but the signals have not been resumed, and no doubt ere this manuscript be printed the *Great Eastern* will herself have returned to tell us of the loss, and of the manner of it. Under such circumstances, it is idle to speculate. We shall soon know whether the electricians on board were deceived by the electrical storm, and, in trying to remedy a supposititious fault, destroyed the cable, or whether some other accident occurred."

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Children Murderer.—One of the most atrocious examples of depravity on record has recently been brought to light in England. The editor of the *Lancet*, in his editorial (Aug. 5, 1865), thus comments upon it.

"Now and then some criminals stand forth in terrible relief, and by the enormity as well as intensity of their misdeeds for the moment astound our senses by some new revelation of the possible scope and extent of human wickedness. Such an instance has just occurred at Exeter, where a woman named CHARLOTTE WINSOR has been sentenced to death for child-murder. The details of her crimes are immeasurably more shocking than any on record. There is reason to believe that for a long period she had systematically pursued, as her recognized calling, the terrible trade of child-murder, and had in its exercise organised a scale of charges to suit the pockets or to meet the necessities of those whose crimes or misfortunes brought them within her reach. The details of this woman's horrible career have no parallel in the history of human wickedness. Human life was her stock in trade; money her sole inducement to its destruction. Murders have before this been committed through desire for gain, but no such murders as these. Infants, in all their dependency, were her victims. Helpless babes, whose only offence was the accident of their birth, found in this female fiend a kind nurse, who nipped their lives in the bud. Hers was not the shame of their parentage; hers not the burden of their support. She had no inducement beyond the receipt of a paltry payment, and this was at times a matter of promise. Infant murder was her vocation. To what extent she has pursued it is known only to Him who specially careth for little children. It would serve no practical purpose to examine the particular incidents of her repeated crimes, so far as they were given in evidence upon this wretch's trial. The mother and murderess bargaining for the destruction of the smiling babe; the murderess removing the infant from its last earthly embrace to place it between the folds of the suffocating bed; the mother in the adjoining room waiting to hear the result, and then assisting in disposing of the body of her lifeless little one, and all within the scope of a "business" visit, is a horrible picture, and yet it is true. While this was being enacted, the cry of the child still echoed in the ears of the murderess. The mother, bewildered with the enormity of her offence, with senses stupefied, heard not the death-struggle of her infant. Its last moan struck upon the hardened heart of the practised destroyer, and she was 'frightened.' That cry called out for vengeance; and such vengeance as the forfeiture of one life can afford for the destruction of many, society will shortly obtain. This woman's crime is even more horrible for what it suggests than for that which it

details. Her position was recognized, and had long been known. Many children had been seen in her house. Many infants, waiting a convenient season for their destruction, must have been observed by her neighbours; and yet, on their disappearance, no one gave utterance to a word of suspicion until the wild waves proclaimed, on the beach at Torquay, the last crime that she had committed. She must have had numerous confidants: young women betrayed and forsaken, or it may be profligate or forsworn, but still young, with perhaps many years to live, carrying with them a sense of terrible crime—not the less terrible because at present undiscovered. They must now tremble lest, in her revenge, if not in her remorse, she who for a brief space inhabits the convict cell should reveal their names, that they also may meet the punishment so justly their due."

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Procreation of the Sexes at Will.—At a late meeting of the Academy of Sciences an interesting memoir was presented by M. Coste. The learned Professor of Embryology at the Collége de France, who has already produced so many remarkable and well known works on this important branch of the natural sciences, related a series of experiments which he had been led to undertake by the publication of M. Thury's (of Geneva) theory on the procreation of sexes at will. This theory, it will be remembered, is grounded on the idea that the ovum passes through two distinct phases: a first period, which corresponds with a lesser degree of maturation, and during which the sex is female; and a second period, one of more advanced maturation, during which the egg is male; and according as fecundation takes place at the beginning or at the end of maturation the product will be male or female. M. Coste's first experiments were made on multiparous animals, chiefly fowls. If we suppose the seminal fluid to be diffused at a given moment on the ovary, and consequently on the ovules which still adhere to it, according to M. Thury's theory the first ovule which tears its covering and issues into the oviduct is necessarily the one which bears the highest degree of maturation. As a single coition permits a hen to lay during twenty days after, it follows that the last ovules which quit the ovary are at the moment of fecundation far less advanced in maturation than the former; these, then, should give male products, and the others female. According to M. Coste this is not the case, and in all his experiments made on hens the first egg was always infertile, whilst the following were indiscriminately male or female. Fecundation may be supposed to take place in the Fallopian tube, and not in the ovary, the sperm being arrested in the pavilion, or at the extremity of the oviduct. But then, each egg which comes into contact with the fertilizing liquid having attained the same degree of maturation, all the products should be male, which is not the case. Other experiments were made on rabbits, to which M. Thury's theory was equally applicable; that is to say, females fecundated when the period of rutting has just commenced should give birth to females, and *vice versâ*. Experience has given a contrary result, and a she-rabbit, having been fecundated at the very outset of the period of rutting, produced a greater number of males than females. M. Coste proposes to examine in a future paper the same phenomena amongst uniparous animals.—*Lancet*, June 3, 1865.

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The Hastings Gold Medal of the British Medical Association.—This medal has been awarded this year to Dr. Barker for his essay on "Deodorization and Disinfection."

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The Astley Cooper Prize.—This prize of fifteen hundred dollars has been awarded to Mr. Jonathan Hutchinson for his essay on "Injuries of the Head and their Treatment."

The subject selected for the next prize, to be awarded in 1868, is *Pyemia*.

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Mr. Lawrence.—This venerable and very eminent surgeon, who has for many years been the senior surgeon of St. Bartholomew's Hospital, has retired from the post he has so long and ably occupied.

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Prof. Malgaigne.—This eminent surgeon has resigned the surgical chair at the Faculty of Medicine of Paris, in consequence of failing health.

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McGill University, Canada.—At the annual convocation of this school, held on the 3d of May last, the degree of M. D. was conferred on 35 candidates.

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